

Japan s Publication for Examined Pat nt
Application No. 77227/1995 (Tokukouhei 7-77227)

A. Relevance of the Above-identified Document

This document has relevance to claims 1 and 8 of the present application.

B. Translation of the Relevant Passages of the Document

[CLAIMS]

[CLAIM 1]

A fabrication process of a semiconductor device, comprising the steps of: applying a conductive thermosetting resin on a region of an insulating substrate, having conductive interconnections, where a semiconductor element is to be provided; applying pressure, using a pulse heating tool, on the semiconductor element against the insulating substrate in such a manner that the conductive interconnections coincide with an electrode of the semiconductor element, and that the electrode is in contact with the conductive interconnections, so as to remove the thermosetting resin from a surface of the conductive interconnections to a surrounding area; and flowing current through the pulse heating tool after the step of applying pressure and in a state where the semiconductor element is pressed against

the insulating substrate, so as to heat the semiconductor element and cure the thermosetting resin by heating, so that the semiconductor element is anchored on the insulating substrate, and that the electrode of the semiconductor element is electrically connected to the conductive interconnections.

[Prior Art]

...A bonding resin 13 such as a UV curable resin or a thermosetting resin is applied on a surface with conductive interconnections 12...

[Embodiments]

Referring to Fig. 1, one embodiment of the present invention is described below.

As shown in Fig. 1a, a thermosetting bonding resin 3 is applied on a surface of an interconnection substrate 1 having conductive interconnections 2, the interconnection substrate 1 being made of ceramic, glass, or glass polyimide. The conductive interconnections 2 are Al, iTO, Cr-Au, or Cu, with a thickness of about 120.1 to 35 μ m. The bonding resin 3 is made of a material such as epoxy or silicone acryl. The bonding resin 3 is applied by a method such as a dispense method or a printing method. Then, as shown in Fig. 1b, a pulse heating tool 6 is used to apply pressure on an LSI chip 4, having projecting electrodes 5, against the interconnection substrate 1, so

that the projecting electrodes 5 coincide with the conductive interconnections 2. The projecting electrodes 5 are solder deposits of Au, Cu, or Al, and have a thickness of about 1 μ m to 30 μ m. Applying pressure on the LSI chip 4 pushes out the bonding resin 3 on the conductive interconnections 2, so that electrical connections are made between the projecting electrodes 5 and the conductive interconnections 2. The applied pressure is about 5g/bump to 150g/bump. Under this condition, current is flown through the pulse heating tool 6 to heat the pulse heating tool 6 and cure the bonding resin 3. The temperature of the pulse heating tool 6 is about 100°C to 250°C, and the duration of heating is about 0.5 to 5 seconds, which offers much more productivity than a conventional steady heating method. The amount of bonding resin 3 cured between the LSI chip 4 and the interconnection substrate 1 is small enough to be cured with the foregoing heating temperature and heating time.